WATER FIGURES

TURNING RESEARCH INTO DEVELOPMENT

QUARTERLY NEWSLETTER OF THE
INTERNATIONAL WATER MANAGEMENT INSTITUTE

CONTENTS

ISSUE 3
2006

ANNOUNCEMENTS

GFAR 2006 Triennial Conference

08 – 11 November 2006, New Delhi, India

This year's theme is 'Reorienting agricultural research to meet the Millennium Development Goals (MDGs)'. Frank Rijsberman is the lead discussant for the working group on 'Blending knowledge systems for an inclusive approach to innovation'.

IWMI
International
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EDITORIAL

WATER FIGURES ISSUE 3, 2006

PUTTING KNOWLEDGE TO WORK

In all areas of IWMI's research, 'knowledge' and the way it is created, captured and communicated is crucial. Knowledge exists in two different forms, tacit and explicit. Often, the most important knowledge is 'tacit' or 'hidden'; it's what accumulates experience and study and is hidden in people's heads, making it difficult to capture and pass on. Explicit knowledge, on the other hand, is what can be expressed, captured, stored in libraries, and is what constitutes our contributions to global public goods. IWMI has set itself the goal of becoming a world class Knowledge Center on Water, Food and the Environment by 2008. This issue of Water Figures presents IWMI's latest efforts in putting these two types of knowledge to work.

Explicit knowledge is our 'core' business. IWMI is supported by the CGIAR and therefore part of a research and development network that generates global public goods to benefit developing countries by increasing income and improving livelihoods for the poor, while protecting the environment. It is committed to making the research, data and information it generates available through easily accessible databases and other services. Increasing attention is being given to producing products that contribute to building intellectual knowledge and supporting partners to find solutions for their water, food and environment problems. This issue of Water Figures focuses on two important projects, and an associated program based at IWMI. All three initiatives work through partnerships and networks to share information and build capacities: the Global Irrigated Area Mapping, the Global Wetland Inventory and Mapping, and Prediction of Unguaged Basins (PUB).

It is becoming the business of researchers, particularly researchers in development, to be aware of how the knowledge they generate is used, and to do what they can to increase the likelihood of their work having an impact on the people who can benefit from it. Traditional research approaches are often isolating, allowing for little interaction between researchers, and even less between researchers and end users. Moreover, the final outputs of research usually come in the form of a good publication, the essence of which is expected to be communicated and disseminated by extension or communications staff—or even extracted by end users themselves. When end users are included in the research process from the inception, it is more likely that the knowledge generated will serve them better.

These two arguments, that research can be improved by sharing knowledge among researchers and involving users in the research process from the inception, is the basis upon which the Knowledge Sharing in Research Pilot Project (KSRPP) was conceived. The KSRPP is working with projects to distill the best practice among researchers that employ innovative approaches to address this key question and make it available to the wider research community. The interview with Pay Drechsel, Leader of IWMI's research theme Agriculture, Water and Cities touches upon some of the questions that are often asked about to the value of such approaches.

Sanjini de Silva
Deputy Head, Information and Knowledge Group
GUEST EDITOR

EVENTS

INTERNATIONAL FORUM ON WATER AND FOOD
Vientiane, Lao PDR, 12 - 17 November 2006
http://forum.waterandfood.org

32ND WEDC INTERNATIONAL CONFERENCE
Sustainable Development of Water Resources, Water Supply and Environmental Sanitation
Colombo, Sri Lanka, 13th - 17th November 2006
http://wedc.lboro.ac.uk/conferences/conference1.php?ID=7

INNOVATION AFRICA SYMPOSIUM
Kampala, Uganda, 20 - 23 November 2006
http://www.ciat.cgiar.org/africa/eri_symposium06_fulltext.htm

PRODUCTION CREDITS

EDITOR Samyuktha Varma
samyuktha.varma@cgiar.org

LAYOUT Sumith Fernando
s.fernando@cgiar.org

COVER PHOTO Lisa Rebelo

IWMI
Headquarters
127 Sunil Mawatha, Pelawatte
Battaramulla, Sri Lanka

MAILING ADDRESS:
P.O. Box 2075, Colombo, Sri Lanka
Telephone: +94-11-2787404, 2784080
Fax: +94-11-2786854

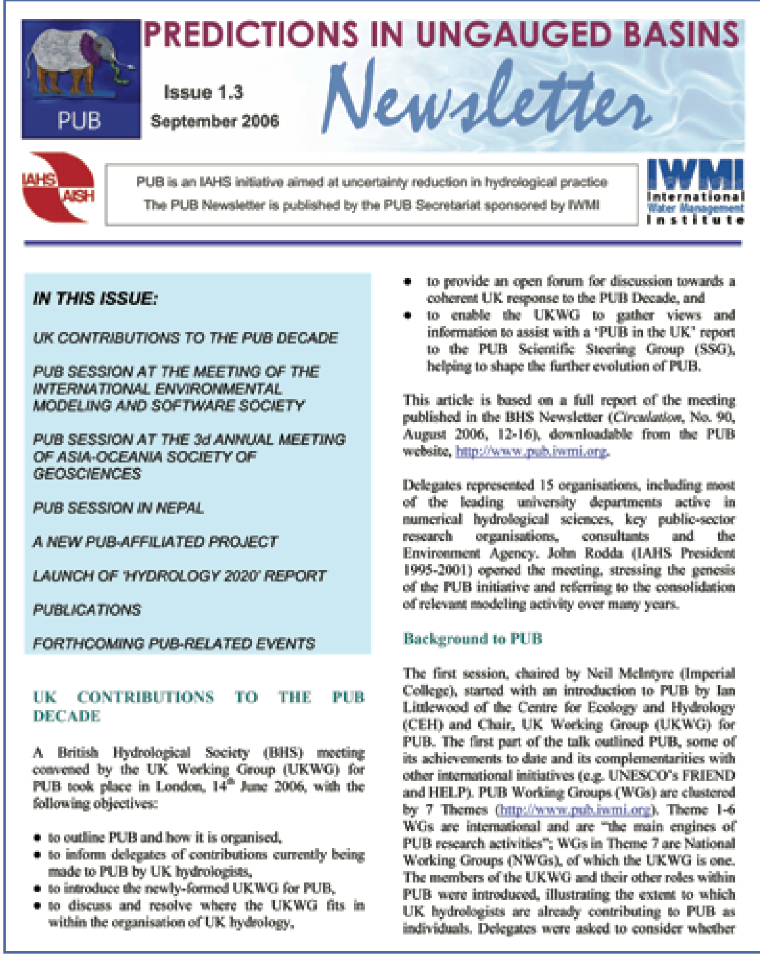
EMAIL: iwmi@cgiar.org

For more information on the Knowledge Sharing in Research Pilot Project contact Sanjini de Silva **sanjini.desilva@cgiar.org**

Engaging with Ungauged Basins

PUB SECRETARIAT

In 2002, the International Association of Hydrological Sciences (IAHS) launched the Decade for Prediction in Ungauged Basins (PUB), 2003–2012. A key feature of the PUB initiative is commitment to the quantification of uncertainties in hydrological predictions. Hydrological prediction, where data are available, is relatively easy but the problem of ungauged basins presents considerable challenges. Over recent decades there has been a continual decline in hydrological gauging networks, reducing the accuracy of hydrological predictions whilst increasing the uncertainty associated with predictions and management of water quantity and quality. PUB is currently organized around six science themes which deal with multiple aspects of hydrological predictions from basin to global scales, development of new theories and approaches from existing data, use of new data collection methods, etc.


PREDICTIONS IN UNGAUGED BASINS

PUB

Issue 1.3

September 2006

Newsletter

IAHS AISH

PUB is an IAHS initiative aimed at uncertainty reduction in hydrological practice

The PUB Newsletter is published by the PUB Secretariat sponsored by IWMI

IWMI International Water Management Institute

IN THIS ISSUE:

UK CONTRIBUTIONS TO THE PUB DECADE

PUB SESSION AT THE MEETING OF THE INTERNATIONAL ENVIRONMENTAL MODELING AND SOFTWARE SOCIETY

PUB SESSION AT THE 3d ANNUAL MEETING OF ASIA-OCEANIA SOCIETY OF GEOSCIENCES

PUB SESSION IN NEPAL

A NEW PUB-AFFILIATED PROJECT

LAUNCH OF 'HYDROLOGY 2020' REPORT

PUBLICATIONS

FORTHCOMING PUB-RELATED EVENTS

UK CONTRIBUTIONS TO THE PUB DECADE

A British Hydrological Society (BHS) meeting convened by the UK Working Group (UKWG) for PUB took place in London, 14th June 2006, with the following objectives:

- to outline PUB and how it is organised,
- to inform delegates of contributions currently being made to PUB by UK hydrologists,
- to introduce the newly-formed UKWG for PUB,
- to discuss and resolve where the UKWG fits in within the organisation of UK hydrology,
- to provide an open forum for discussion towards a coherent UK response to the PUB Decade, and
- to enable the UKWG to gather views and information to assist with a 'PUB in the UK' report to the PUB Scientific Steering Group (SSG), helping to shape the further evolution of PUB.

This article is based on a full report of the meeting published in the BHS Newsletter (*Circulation*, No. 90, August 2006, 12-16), downloadable from the PUB website, http://www.pub.iwmi.org.

Delegates represented 15 organisations, including most of the leading university departments active in numerical hydrological sciences, key public-sector research organisations, consultants and the Environment Agency. John Rodda (IAHS President 1995-2001) opened the meeting, stressing the genesis of the PUB initiative and referring to the consolidation of relevant modeling activity over many years.

Background to PUB

The first session, chaired by Neil McIntyre (Imperial College), started with an introduction to PUB by Ian Littlewood of the Centre for Ecology and Hydrology (CEH) and Chair, UK Working Group (UKWG) for PUB. The first part of the talk outlined PUB, some of its achievements to date and its complementarities with other international initiatives (e.g. UNESCO's FRIEND and HELP). PUB Working Groups (WGs) are clustered by 7 Themes (http://www.pub.iwmi.org). Theme 1-6 WGs are international and are "the main engines of PUB research activities"; WGs in Theme 7 are National Working Groups (NWGs), of which the UKWG is one. The members of the UKWG and their other roles within PUB were introduced, illustrating the extent to which UK hydrologists are already contributing to PUB as individuals. Delegates were asked to consider whether

The main engines of PUB activities are PUB Working Groups (WGs) that are self-organized. Over the last 2 years, a number of such groups have emerged throughout the world and PUB has become a global activity and network. The PUB Secretariat was established at the headquarters of IWMI in Colombo, in January 2006 to facilitate communication and information exchange between growing number of PUB WGs and interested individuals, and to expand PUB coverage to practitioners and policymakers, particularly in developing countries,. It represents an important milestone in the evolution of the PUB movement indicating stability and continuity, confidence in PUB and acknowledgement of the enthusiasm for PUB in the South. According to IWMI's Director General Frank Rijsberman: "There are clear benefits for us from PUB development including better quantification of hydrological processes in poorly gauged basins where we operate, better awareness and use of the PUB-generated knowledge, tools and methods in IWMI's future research, expanded networks and partnerships. The movement will highlight bottlenecks of hydrological activities caused by data limitations and work with relevant agencies to improve data access and sharing opportunities for hydrological analyses in the developing world".

Establishment of the PUB Secretariat at IWMI is a logical step. IWMI conducts hydrology-related work within several themes and projects, including scaling-up water productivity from field to basin level, environmental flows, river and wetland modeling. This research is likely to diversify and expand in the future. Also, IWMI's research is often trans-disciplinary and always policy-related, which could add an additional dimension to future PUB development, making the hydrological science outputs more community-relevant.

Vladimir Smakhtin, Principal Hydrologist at IWMI, explains: "Our main activities include maintenance of the PUB mailing list and newly built PUB web site and producing the PUB Newsletter. It's important to prioritize future PUB activities around a small number of themes, in stages, so that progress can be achieved and demonstrated. We communicate regularly with all WGs, provide information on PUB-related events and relevant funding opportunities. We want to expand the PUB network beyond its usual frame and invite information on research highlights, commentaries on various thematic PUB issues, and provocative ideas. We are experimenting. The PUB community never had such a powerful dissemination mechanism before. But our next steps will be towards expanding our on-going research activities in benchmark basins and leveraging them with activities of our partners".

The current PUB Chair, Jeff McDonnell of Oregon State University adds: "There is a consortium of people now discussing PUB work in Ethiopia. This group includes colleagues from Oregon State University, Delft and UNESCO-IH,) and the Swedish Agricultural University. There appears to be tremendous potential for collaborative work in the Blue Nile (which is also part of the CPWF Nile benchmark basin) on a new project on integrated watershed management with a focus on poverty reduction. There is also great potential for PUB-type work relating flow regimes to land-use and climate change. If all of this could be marshaled within the scope of IWMI presence in the region, there could be great synergy between groups and a geographical focus to some collaborative studies".

The nature of hydrological predictions at present is changing together with the global change. Whilst floods and droughts continue to be major concerns that need to be prevented or managed, land degradation and water quality deterioration are also becoming major problems due to the scale of human impacts. PUB must evolve to ensure the increased accuracy of predictions and IWMI has a vital role to play in this process.

Contact **iwmi-pub-secretariat@cgiar.org**, or join the PUB mailing list and read Pub Newsletter on-line through **http://www.pub.iwmi.org**.

GIAM: to help answer questions about water for food and nature

PRASAD S. THENKABAIL, CHANDRASHEKHAR M. BIRADAR, HUGH TURRAL, PRAVEEN NOOJIPADY, VENKATESWARLU DHEERAVATH, MANOHAR VELPURI, XUELIANG CAI, JAGATH VITHANAGE, YUANJIE LI, SAMYUKTHA VARMA, AND MURALIKRISHNA GUMMA

A SHORT HISTORY OF IRRIGATION

Humans began to make the transition from a nomadic lifestyle to settled agriculture around 12,000 years ago. There is sufficient evidence that irrigation is almost as old. Many examples of ancient irrigation can still be seen in the Nile, Euphrates, Indus and Ganges basins that date as far back as 4000 B.C. In fact, the survival of these civilizations depended greatly on their ingenuity to extend irrigation and cultivation. The Sumerians, Babylonians and Mesopotamians who lived by the Tigris and Euphrates rivers practiced irrigation about 2000 to 6000 years ago, the Harappan civilization irrigated their fields about 4000 years ago, and in Dujiyangyan in Szechuan, China, large-scale irrigation systems have expanded for up to 4000 years and now cover an near contiguous area of nearly a million hectares.

It is only in the last 200 years, that changes in the extent and intensity of irrigation have become more pronounced. Population growth and its demand for water for food production is one of the main reasons. Around the 1800s, historical estimates reported a meagre 8 Mha of global irrigated area which were largely contributed to by surface dams and canals. By the 1940s this area grew to a figure of about 95 Mha. Irrigated areas began to rise significantly soon after the Second World War. In the period between 1950 and 1990, development theories based on modernization favored heavy investment in large-scale irrigation projects through dams. In addition, ground water pumping, supported by deep tube wells, rose exponentially, beating out centuries of development in surface water irrigation in many parts of the world. These technological advances resulted in an expansion of irrigated area, which rose to between 250 to 280 Mha by 1990s.

It is estimated that irrigation provides over 40% of the world's food from about 18% of cultivated area.

OUR GROWING DEMAND FOR WATER

As the world's population reaches 6 billion, experts estimate that at least another 2,000 cubic kilometers of water are needed to meet future food needs. The growing competition for water from rising urban and industrial needs and the recognition of environmental water requirements is adding to this demand.

Accurately quantifying the area and intensity of irrigation in the world can help make more precise estimates of the amount of water used for food production. This is critical as irrigation is by far the single biggest consumer of water. The key questions we need to answer are: How much irrigation do we have now? How much potential is still left? What is the limit to achieve a sustainable balance with nature? How much water will this require, and will this water be available?

IWMI AND GIAM

In 2002, the Global Irrigated Area Mapping (GIAM) project was initiated, supported by IWMI core funds and the Comprehensive Assessment of Water Management in Agriculture. Using a wide range of sophisticated remote sensing images and techniques, the project set out to observe changes in vegetation to help make precise definitions of the area and spatial distribution of global irrigation.

Satellite remote sensing offers a consistent, timely, (and increasingly) free resource to estimate and monitor irrigated areas while meeting high scientific standards. In regions such as Asia where secondary data on cropping intensities are not accurately recorded, it also helps to identify the extent of multiple cropping (planting of two or three crops in a year). One of GIAM's most important contributions so far has been its efforts to develop methods and techniques for consistent estimations of global irrigation, over space and time, using remote sensing.

A QUICK LOOK AT THE STATISTICS

The project produced a global irrigated area map at 10-km scale (GIAM10 km V2.0) for the end of the last millennium, using remote sensing data (see Figure 1). The map calculates 'annualized area' which takes into consideration irrigated areas during different seasons over the same areas within a given year. Of the total annualized irrigated area of 480 Mha, 75 percent (375 million hectares) of all irrigated areas of the world is in Asia. Europe follows with 8 percent, North America with 7 percent, South America takes up 4 percent, while Australia and Africa each takes 2 percent.

The spatial distribution of global irrigated area by country looks something like this: about 59% (284 Mha) of the world's irrigation is concentrated in China (31.5 %) and India (27.5 %); not surprising considering the combined population that depends on this water for food. The annualized irrigated areas for China and India are 151 Mha and 132 Mha respectively. The break-up of this for China is 76 Mha in season 1, 68 Mha in season 2, and the rest is continuous. India has 73 Mha in the first season, 54 Mha in second season, and the rest is continuous.

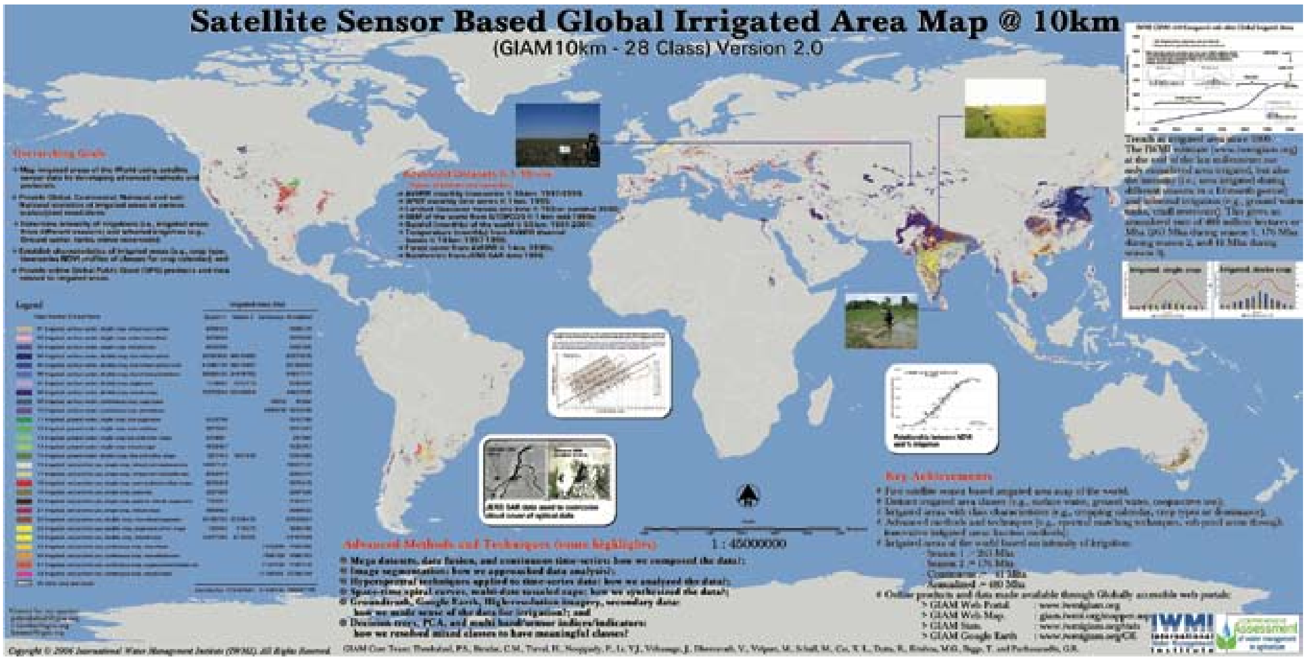


Figure 1: IWMI's Global Irrigated Area Map (GIAM) at 10 kilometer resolution using satellite sensor data. The web map and the country-by-country statistics of the irrigated areas are available from the GIAM web portal www.iwmigiam.org.

The next countries that follow on the list of leading irrigated area (as a percentage of the global annualized sum of 480 Mha) are USA (5%), Russia (3.5%) and Pakistan (3.3%). Nine countries: Argentina, Australia, Bangladesh, Kazakhstan, Myanmar, Thailand, Turkey, Uzbekistan and Vietnam take between 1 and 2 percent of the total area. Every other country in the world, individually, has less than 1 percent irrigated area. The 40 leading irrigated area countries have nearly 96 percent of all irrigation in the world. Surface-water irrigation is 61 percent and the rest (39%) is conjunctive, including surface and groundwater, or pure ground water.

IWMI's irrigated area estimates have several implications, the most important is that increases in irrigated area mean more water is being used. The irrigated area map can be used in many ways; for example, in global food trade studies, water budgeting, and evapotranspiration computation. The IWMI map is first of its kind as it shows the intensity of irrigation, its precise spatial distribution, and characteristics such as the duration of crops in the irrigated areas. The statistics such as those for China and India show that there is an increasing need to manage the use of water for food production and nature.

GIAM maps have also been produced at 500 meter resolution for 7 Countries within the sub-Continent and at 30 meters for IWMI's benchmark basins. GIAM methods using satellite sensor data offer opportunity to continue mapping irrigated areas in the future using consistent remote sensing datasets.

GIAM AND RELATED PRODUCTS

Two global irrigated area maps were produced by the GIAM team: GIAM10 km 28 class map (see Figure 1) and GIAM10 km 8 class map. The classes represent: a) irrigation by surface water, ground water and conjunctive use; b) cropping intensity (e.g., single crop, double crop and continuous crop) for every class; and c) crop type or dominance. The accuracy of mapping irrigated areas was determined using independent dataset from the Google Earth, one partially independent dataset from groundtruth and degree confluence project data, and one non-independant dataset from groundtruth. The accuracies varied between 84 and 91 percent with the errors of omissions less than 16 percent, and errors of commission less than 21 percent.

Particular features of GIAM 10 km V2.0 product are that it can establish seasonal and annualized irrigated areas or the intensity of irrigation, map informal irrigation such as small reservoirs, tanks and groundwater in addition to conventional surface water irrigation. It can also study historical biomass dynamics for every irrigated area class and for each pixel within that class. This information can be generated for every month of the last 20 years. The results of the study were compared with the irrigated area map statistics of the Food and Agricultural Organization of the United Nations (FAO) and the University of Frankfurt (UF) version 3.0 (FAO\UF V3.0).

Other products that have come out of the GIAM project include global map of rain-fed cropland areas (GMRCA), and global map of land use\land cover areas (GMLULCA). In addition, 500 m products for the Indian sub-Continent and 30 meter products for the 3 river basins: Ruhuna (Sri Lanka), Krishna (India), and Syr Darya (Central Asia).

The project team continues to work on collecting data based on groundtruthing to verify and upgrade the map. We welcome feedback from users, readers, and interested parties on the methods and results presented, and actively seeks to build a global 'groundtruth' database. All the imagery and documentation associated with GIAM is available through the dedicated portal http://www.iwmigiam.org. The GIAM products were released to the World by Prof. Frank Rijsberman, the Director-General of IWMI during the first International workshop on GIAM held in Colombo Sri Lanka during September 25-27, 2006. The portal consists of: (a) GIAM country statistics, (b) GIAM web map, (c) GIAM on Google, and (d) GIAM products and data. The products consist of maps, images, class characteristics, area calculations, snapshots, animations, and accuracies. It is our hope that these products will, in time, be a useful resource for the remote sensing and water management community, both for researchers and practitioners. One immediate application will be to set up an online "irrigated area reporting systems (IARS)" for Individual Nations based on GIAM work.

For more information contact Prasad S. Thenkabail, **p.thenkabail@cgiar.org**, or visit **http://www.iwmigiam.org**

Global Wetland Inventory and Mapping (GWIM)

WETLANDS TEAM: MAX FINLAYSON, ROBERT ZOMER, NIDHI NAGABHATLA & LISA MARIA REBELO

Photo Credit Lisa Rebelo

The need for effective wetland mapping and inventory has been raised in many fora and by many organizations over the past decades. Past mapping and inventory has included the production of continental scale inventories in the late 1980s and early 1990s, with spatial analysis of remote sensing data assuming a greater role in the 1990s and more recently. Reviews of the extent of wetland mapping and inventory and suitable methods have been undertaken including those by the Wetland Inventory and Monitoring Specialist Group (Finlayson, Davidson & Stephenson 2002), the Ramsar Convention (Finlayson & Spiers 1999; Finlayson et al. 1999) and IGBP (Darras et al. 2000) that looked at global and national coverage and identified inconsistencies and gaps. Lehner & Doll (2004) recently compiled information on wetland distribution and mapping and produced a global map and noted gaps and inaccuracies. The Millennium Ecosystem Assessment confirmed earlier statements that the extent of wetland mapping and inventory was inadequate and that the most recent estimates of wetland extent were under-estimates with significant gaps regionally and for various types of wetland ecosystems.

Key issues that have afflicted much past wetland mapping and inventory have been summarized by Finlayson et al. (1999) and include inadequate planning and consistency as well as short-comings in available methods and data. Further, more detailed methods have been developed and tested through organizations such as IWMI working with local organizations in southern Asia and Africa in particular. Acknowledging the identified shortcomings in existing inventory, the lack of an accurate and reliable global assessment, and recognizing the many ongoing efforts to address this issue at various scales, IWMI has developed a Global Wetland Inventory and Mapping (GWIM) project to work with partners and through the framework of the Ramsar Convention to undertake a comprehensive, multiple purpose and multi-scale wetland inventory. The project is based on the premise that better inventory data can be obtained through the harmonization of institutional, regional and national initiatives and will contribute to improved global monitoring and assessment of the state of wetlands.

The project is based on partnerships and collaboration and access to multiple sources of data and information. It also incorporates knowledge transfer and capacity building and supports the essential role of national level institutions to undertake assessments and establish ongoing monitoring programs. A prime goal of the project is develop a network that can build and support local, national, and regional level capacity for wetlands mapping and inventory, and the production of a harmonized information base for effective assessment of change and pressures on wetlands globally. The latter in particular requires an understanding of the applicability of data at different scales, harmonization amongst classification systems, methods, protocols, and inventory approaches. Thus, GWIM builds on past reviews, in particular identified shortcomings in existing inventory, as well as recent Resolutions of the Ramsar Wetlands Convention that have encouraged multiple scalar analyses using core data elements suitable for specified purposes and for informing regional management, and taking advantage of recent advances in GIS technology and spatial data availability.

GWIM will address the major causes of wetland loss and in particular investigate the role of agriculture and fisheries which have been identified as being amongst the most important drivers of past and current loss and degradation. The project will specifically seek to develop image-based automated techniques to describe the ecological character of wetlands and to ascertain the condition and extent of change that has occurred in response to agricultural and fisheries developments and to compare these to other common drivers of change.

The initial wetland inventory and mapping effort was undertaken through a project in Sri Lanka that was subsequently expanded to a regional scale as the initial analyses were successfully developed in line with Ramsar resolutions covering the development of an integrated inventory, assessment and monitoring approach. Through partnerships we have initiated regional/local mapping and inventory projects at chosen scales and for priority purposes with the intent of combining these into regional overviews at appropriate scales. We will also outline and develop capacity building opportunities and implement these through partnerships. Further collaboration with the Ramsar Scientific and Technical Review Panel is envisaged to develop suitable data resources and techniques for rapid inventory and assessment in line with international best practice and research directions linked with the Conventions agriculture and wetlands program.

The project currently covers the following:

- Development of a comprehensive strategy and workplan for GWIM, based on an overview of the current status of wetland mapping and the state of the art of methods, data and available sensors;
- Exploration of the role of automated spatial techniques to assess the extent of wetlands addressing seasonal and inter-annual changes;
- Determination of the extent of wetland degradation and loss caused by water management and agricultural activities relative to other causes of adverse change in these ecosystems;
- Assessment of the importance of wetlands globally for agricultural and fishery activities that support livelihoods and human well-being;
- Assessment of the regional extent of agricultural and fishery activity in wetlands and provide an updated inventory database that can be used to assess the extent of spatial and temporal change in wetlands;
- Development of effective data management formats for wetland inven tory and assessment, in line with international standards, and assist in the development of local capacity to use these effectively;
- Development of a detailed wetlands classification system for potential inclusion in the FAO Land Cover Classification System (LCCS); and
- Development of an interactive map server to display online interactive mapping applications and geospatial analysis

For further information email Nidhi Nagabhatla **n.nagabhatla@cgiar.org**

Interview: Pay Drechsel talks about Knowledge Sharing in Research

Photo Credit Sharni Jayawardena

Dr. Pay Drechsel leads the IWMI research theme of Water, Agriculture and Cities, which looks at the rapidly growing sector of urban and peri-urban agriculture and seeks to find solutions to make an asset out of wastewater while protecting the environment and safeguarding human health. In this interview he talks about his views on knowledge sharing approaches and his conversion from skeptic to believer when his team used the 'open space' approach to facilitate a potentially difficult discussion between members of the municipality and peri-urban farmers on the issue of safe wastewater use in agriculture.

Pay is the Principal Investigator on the Challenge Program on Water and Food project Safeguarding Public Health Concerns, Livelihoods and Productivity in Wastewater Irrigated Urban and Peri-urban Vegetable Farming in Ghana and Burkina Faso, led by the University in Kumasi, Ghana. Knowledge sharing activities are helping to understand the farmers' concerns, generate dialogue between institutions and most importantly arrive at a shared understanding of the various dimensions of the problem and its possible solutions. At the project's first Knowledge Sharing workshop, various groups including farmers from vegetable farmers associations, researchers and members of the municipality got together in an open forum to discuss issues and possible solutions. All stakeholders were given an opportunity to express their views on what interventions were needed to promote the safe use of wastewater in urban and peri-urban agriculture.

How did you become interested in 'knowledge sharing' as a concept and what's your practical experience so far?

When I first heard about knowledge sharing it sounded interesting, but also used a lot of buzz words. At that time I didn't know how we could actually benefit from it. It was only this year that we received some initial funds to add value to the project you mentioned. Still, I was quite skeptical at this early stage. More out of curiosity, I agreed to co-moderate the first knowledge sharing workshop with my colleagues from research and we extended our invitation beyond our normal project partners to wholesalers, farmers, municipal authorities, networks and associations. We realized that there is a lot of knowledge that we are not yet capitalizing on that would help to link our outcomes with the impact we want to have.

The activities helped us simultaneously envision and define a process to improve the safety of the consumers. Then we realized that actually to reach the vision we need even more partners than we thought, and to include these partners in each project phase. In our case, the consumers, the farmers, and the market people—the wholesalers the retailers, plus authorities and media had to get together from the start.

What's the key to involving end-users in the research process?

It's the communication that's crucial. However you want to do it, you have to consider that it is very important to create something like an 'end-user communication process' for any kind of project. The end-user communication process reminds us whose benefit we are actually working for, so that we tailor our plans and objectives to the perception and wishes of those who are going to use it. Standard research approaches entail going to a farm and speaking to farmers, and then going to the municipality and speaking to municipal workers, but knowledge sharing brings the knowledge of various people together. And you need a workshop environment where people can express their concerns freely; allowing the farmer to confront the members of the municipality— thus there is more chance of creating mutual understanding of the problems and finding a way to go forward.

It was a very interesting discussion because for the first time we were speaking to a diverse group on issues beyond what we are normally doing. The 'open space' approach brought the easy atmosphere of the coffee break into the main meeting, and we were able to exchange information, locate where the gaps are and what we are going to do about them. Those present had milestones by which they wanted to measure progress, and this free exchange made us look beyond this year to the next, and more in the long term.

Would this new way of working mean much more investment?

It doesn't cost the world. Knowledge sharing involves people, bringing people into the process.

We now know that we have to plan appropriately to bring these activities in. In most projects, what matters is only what comes in the end, we don't make research for ourselves, we research for our target groups, and so every partner should be integrated into the process. This is the crucial part, absolutely crucial. We are now trying to turn our partners around to finance more knowledge sharing activities. Before these counted for what we called 'dissemination', but this used to be done without actually engaging in an end-user discussion on what we are doing.

What avenues are you considering to reach out to the farmers with the key messages of your research?

In our particular case it involves for example the Press. Changing the behaviour of farmers and food vendors towards 'best (safer) practices' requires incentives and maybe also pressure beyond the abilities of the authorities. But imagine to list certain restaurants under "safe food" in tourist guides or to reward "best farmers" in the newspapers or TV news - this can have a big impact. We are now exploring these and other options through a series of mini-workshops for our target groups using the open space approach.

Knowledge sharing lengthens the research process. Does using knowledge sharing approaches in research projects compromise time?

Yes it does, but in any project you should aim for a compromise between the time you allocate for the research, and the time for involving your boundary partners and investing in knowledge sharing. In the end it's about doing a good job so that people can make use of what we researchers produce.

For more information on the project contact Pay Drechsel **p.drechsel@cgiar.org.**
Read more about Open Space **www.openspaceworld.org**

IWMI's Research Report 105 "An Irrigated Area Map of the World (1999) Derived from Remote Sensing" summarizes the materials and methods used to create a series of maps of irrigated areas of the world using remote sensing approaches. The document also provides details of how the estimates of global irrigated areas were derived. It provides comprehensive results and irrigated areas of the Countries. Irrigated areas of the countries are reported for the end of the last millennium based on the nominal resolution of 10 kilometers data.

IWMI is collaborating with the FAO and University of Frankfurt to develop a joint vision and strategy on Global Irrigated Mapping (GIAM). This is in addition to developing partnerships and collaborations with national governments and institutes. Work continues on further refinement of methodologies and setting up of irrigated area reporting system (IARS) for individual nations. Work in this regard is underway for China, India, USA, and Sri Lanka. During the GIAM 2006 International Workshop held in Colombo, Sri Lanka, recently, a Consortium for Irrigated Area Mapping and Assessment (CIAMA) was informally agreed upon with a number of international partners. (Read all about GIAM on pg.4)

Recent Publications

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IWMI RESEARCH REPORTS

1.Abdullaev, Iskandar; Ul Hassan, Mehmood; Manthrithilake, Herath; Yakubov, Murat. 2006. The reliability improvement in irrigation services: Application of rotational water distribution to tertiary canals in Central Asia. Colombo, Sri Lanka: IWMI. 22p. (IWMI research report 100)

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2.Atapattu, Sithara; Molden, David. 2006. Achieving food and environmental security: Better river basin management for healthy coastal zones. In Hoanh, Chu Thai; Tuong, T. P.; Gowing, J. W.; Hardy, B. (Eds.). Environment and livelihoods in tropical coastal zones: Managing agriculture, fishery, aquaculture conflicts. Wallingford, UK: CABI. pp.293-301.

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